CLAIMS

1. Method of allocating communication codes to channels set up in respect of mobile terminals in communication in a cell of a radiocommunication system, in which the cell is served by a fixed station having means of adjustment of send/receive parameters defining a respective antenna pattern in respect of each mobile terminal in the cell, in which the allocated communication codes form part of a set of codes some at least of which are mutually orthogonal, wherein in response to a channel setup or reconfiguration request in respect of a first mobile terminal in the cell, the allocation to the said channel of a code nonorthogonal to at least one code of the set already allocated to another channel set up in respect of a second mobile terminal in the cell is conditionally admitted, as a function of a comparison between the send/receive parameters determined in respect of the first and second terminals.

2. Method according to Claim 1, in which the allocation of a code nonorthogonal to at least one code of the set already allocated is admitted when the said setup or reconfiguration request occurs while the set no longer offers any code tailored to the channel to be set up or to be reconfigured and orthogonal to all the communication codes already allocated.

3. Method according to Claim 1, in which the said send/receive parameters define, in respect of each mobile terminal in the cell, a main send/receive direction and in which the said comparison between the send/receive parameters determined in respect of the first and second terminals comprise a criterion of discrepancy between the main directions defined in respect of the first and second terminals.

4. Method according to Claim 1, in which the said allocation to the said channel of a code nonorthogonal to at least one code of the set already allocated to another channel set up in respect of a second mobile terminal in the cell is admitted when the said comparison between the send/receive parameters determined in respect of the first and second terminals exhibits a discrepancy greater than a threshold.

5. Method according to Claim 1, in which one selects as communication code to be allocated to the channel to be set up or to be reconfigured in respect of the said first terminal a code nonorthogonal to at least one code already allocated to another channel set up in respect of a second terminal such that the said comparison between the send/receive parameters determined in respect of the first and second terminals exhibits a maximum discrepancy.

6. Method according to Claim 1, in which an antenna of the fixed station comprises several radiating elements, each associated with a respective weighting coefficient, and in which the send/receive parameters determined in respect of a mobile terminal in the cell comprise a fleet of complex weighting coefficients associated with the antenna elements in respect of a radio signal exchanged between the said terminal and the fixed station.

7. Method according to Claim 6, in which the said comparison between the send/receive parameters determined in respect of the first and second terminals furthermore depends on a respective transmission power of the radio signals exchanged between the said first and second terminals and the fixed station.

8. Method according to Claim 7, in which an integer k designates the said first terminal and an integer M greater than or equal to 2 is such that there exist M-1

second terminals, in which the complex weighting coefficients w_i^j, with $1 \le i \le N, N \ge 2$, j integer different from k, are associated with the radiating elements i of an antenna of the fixed station in respect of a radio signal exchanged with a mobile terminal j from among the M-1 second mobile terminals, in which the complex weighting coefficients w_i^k are associated with the said radiating elements i in respect of a radio signal exchanged with the mobile terminal k, in which P^j and P^k are the transmission powers in respect of the radio signals exchanged between the fixed station and the mobile terminal j and the mobile terminal k, respectively, and in which the said comparison between the send/receive parameters determined in respect of the said first and second terminals corresponds to the ratio

$$\frac{\sum_{i\in\{1\ldots N\}} \sqrt{P^k} \times (w_i^{k*} \cdot w_i^k)}{\sum_{j\in\{1\ldots M\},j\neq k} \sqrt{P^j} \times \left(i\in\{1\ldots N\} \sum w_i^{k*} \cdot w_i^j\right)}$$

9. Method according to Claim 1, in which the said comparison between the send/receive parameters determined in respect of the said first and second terminals is evaluated periodically so as to request a reconfiguration of the channel in respect of the said first terminal.

10. Method according to Claim 1, in which the said channels are downlinks.

11. Method according to Claim 1, in which the said channels are uplinks.

12. Method according to Claim 1, furthermore comprising an estimation of speed of the first mobile terminal at least and in which the allocation of code

to the channel to be set up or to be reconfigured in respect of the said first terminal furthermore depends on the estimated speed.

13. Method according to Claim 12, in which the estimation of speed comprises an estimation of angular speed of the said mobile terminal comprising a storage of some at least of the said send/receive parameters determined in respect of the said mobile terminal and an estimation of a variation of the said send/receive parameters over a time period.

14. Method according to Claim 12, in which the allocation to the said channel to be set up or to be reconfigured in respect of the first mobile terminal of a code nonorthogonal to at least one code of the set already allocated to another channel set up in respect of a second mobile terminal in the cell is moreover performed if the estimated speed of the first mobile terminal is less than a speed threshold.

15. Method according to Claim 1, furthermore comprising an estimation of a sense of movement of the said first and second mobile terminals and in which the allocation of code to the channel to be set up or to be reconfigured in respect of the first mobile terminal furthermore depends on the said estimations of the senses of movement.

16. Method according to Claim 15, in which the allocation to the said channel of a code nonorthogonal to at least one code of the set already allocated to another channel set up in respect of a second mobile terminal in the cell as a function of the said comparison of the send/receive parameters is subjected to a more severe condition if the said estimations of the senses of movement show a mutual approaching of the first terminal and at least one of the said second terminals.

17. Method according to Claim 1, in which the said send/receive parameters determined in respect of some at least of the mobile terminals are transmitted by the fixed station to a station controller and in which the allocation of code is performed by the said station controller.

18. Fixed station of a radiocommunication system comprising:

- an antenna system for serving a cell;
- means of communicating with mobile terminals in the said cell by way of the antenna system according to channels to which communication codes are respectively allocated;
- means of adjustment of send/receive parameters defining a respective antenna pattern in respect of each mobile terminal in the cell;
- means of transmission, to a station controller, of information relating to the send/receive parameters determined in respect of some at least of the mobile terminals; and
- means of reception, from the station controller, of a command for allocating to a channel a code determined by the station controller as a function of some at least of the said information transmitted, relating to the send/receive parameters.

19. Fixed station according to claim 18, in which the said antenna system comprises several radiating elements, each associated with a respective weighting coefficient, and in which the said information relating to the send/receive parameters determined in respect of a mobile terminal comprise a fleet of complex weighting coefficients associated with the antenna elements in respect of a radio signal exchanged between the said terminal and the fixed station.

20. Station controller in a radiocommunication system furthermore comprising a fixed station comprising an antenna system for serving a cell and able to communicate with mobile terminals in the said cell by way of the antenna system according to channels to which communication codes are respectively allocated, the said fixed station having means of adjustment of send/receive parameters defining a respective antenna pattern in respect of each mobile terminal in the cell, the station controller comprising:

- means for receiving, from the said fixed station, information relating to the said send/receive parameters determined in respect of some at least of the mobile terminals;
- means for receiving a setup request and means for generating a reconfiguration request for a channel in respect of a first mobile terminal in the cell;
- means of conditional allocation, to the said channel, in response to the said request, of a code nonorthogonal to at least one code of the set already allocated to another channel set up in respect of a second mobile terminal in the cell, as a function of a comparison between the information received, relating to the send/receive parameters determined in respect of the first and second terminals.

21. Station controller according to Claim 20, in which the means of allocation control the allocation of a code nonorthogonal to at least one already allocated code of the set in response to a setup or reconfiguration request occurring while the set no longer offers any code tailored to the channel to be set up or to be reconfigured and orthogonal to all the communication codes already allocated.

22. Station controller according to Claim 20, in which the said send/receive parameters define, in respect of each mobile terminal in the cell, a main send/receive

direction and in which the said comparison between the information relating to the send/receive parameters determined in respect of the first and second terminals comprise a criterion of discrepancy between the main directions defined in respect of the first and second terminals.

23. Station controller according to Claim 20, in which the antenna system of the base station comprises several radiating elements, each associated with a respective weighting coefficient, and in which the said information received, relating to the send/receive parameters determined in respect of each mobile terminal in the cell comprise a fleet of complex weighting coefficients associated with the antenna elements in respect of a radio signal exchanged between the said terminal and the fixed station.

24. Station controller according to Claim 23, furthermore comprising means of determination of a transmission power of a radio signal exchanged between each mobile terminal and the said fixed station, in which the said comparison between the information relating to the send/receive parameters determined in respect of the first and second terminals furthermore depends on the respective transmission power of the radio signals exchanged between the said first and second terminals and the fixed station.

25. Station controller according to Claim 24, in which an integer k designates the said first terminal and an integer M greater than or equal to 2 is such that there exist M-1 second terminals, in which the complex weighting coefficients w_i^j, with $1 \leq i \leq N, N \geq 2$, j integer different from k, are associated with the radiating elements i of an antenna of the fixed station in respect of a radio signal exchanged with a mobile terminal j from among the M-1 second mobile terminals, in which the complex weighting coefficients w_i^k are

associated with the said radiating elements i in respect of a radio signal exchanged with the mobile terminal k, in which P^j and P^k are the transmission powers in respect of the radio signals exchanged between the fixed station and the mobile terminal j and the mobile terminal k respectively, and in which the said comparison between the information relating to the send/receive parameters determined in respect of the first and second terminals corresponds to the ratio

$$\frac{\sum_{i\in\{1\ldots N\}}\sqrt{P^k}\times(w_i^{k*}\cdot w_i^k)}{\sum_{j\in\{1\ldots M\},j\neq k}\sqrt{P^j}\times(\sum_{i\in\{1\ldots N\}}w_i^{k*}\cdot w_i^j)}.$$

26. Station controller according to Claim 20, comprising means for periodically evaluating the said comparison between the information relating to the send/receive parameters determined in respect of the first and second terminals so as to generate a reconfiguration request for the channel in respect of the said first terminal.

27. Station controller according to Claim 20, furthermore comprising means of estimation of speed of the first mobile terminal at least, in which the said means of allocation of code to the channel to be set up or to be reconfigured in respect of the said first terminal make allowance for the estimated speed.

28. Station controller according to Claim 27, in which the means of estimation of speed comprise means of estimation of an angular speed of the said mobile terminal comprising means of storage of some at least of the said information received, relating to the send/receive parameters determined in respect of the said terminal and the fixed station and means of

estimation of a variation of the said information received over a time period.

29. Station controller according to Claim 20, furthermore comprising means of estimation of a sense of movement of the said first and second mobile terminals, in which the means of allocation of code to the channel to be set up or to be reconfigured in respect of the first terminal make allowance for the said estimations of the senses of movement.

30. Station controller according to Claim 29, comprising means for subjecting the said comparison between the information relating to the send/receive parameters determined in respect of the first and second terminals to a more severe criterion if the said estimations of the senses of movement show a mutual approaching of the first terminal and at least one of the said second terminals.

31. Station controller according to Claim 20, in which the said means of allocation of code admit the allocation, to the said channel, of a code nonorthogonal to at least one code of the set already allocated to another channel set up in respect of a second mobile terminal in the cell, when the said comparison between the information received, relating to the send/receive parameters determined in respect of the first and second terminals exhibits a discrepancy greater than a threshold.

32. Station controller according to Claim 20, in which the said means of allocation control the allocation to the channel to be set up or to be reconfigured in respect of the said first terminal of a code nonorthogonal to at least one code already allocated to another channel set up in respect of a second terminal such that the said comparison between the information relating to the send/receive parameters determined in

respect of the first and second terminals exhibits a maximum discrepancy.